

Weatherization Program Notice 00-5

Effective Date - October 6, 2000

SUBJECT: APPROVAL OF REPLACEMENT REFRIGERATORS AND ELECTRIC WATER HEATERS AS ALLOWABLE WEATHERIZATION MEASURES

PURPOSE: To issue approval of replacement refrigerators and electric water heaters as allowable weatherization measures for the Low-Income Weatherization Assistance Program (Weatherization).

SCOPE: The provisions of this guidance apply to all grantees applying for financial assistance under the Department of Energy (DOE) Weatherization Assistance Program.

BACKGROUND: Title IV, Energy Conservation and Production Act, as amended, authorizes the Department of Energy to administer the Low-Income Weatherization Assistance Program. All grant awards made under this program shall comply with applicable law including regulations contained in 10 CFR Part 440, and other procedures applicable to this regulation as DOE may from time to time prescribe for the administration of financial assistance.

DOE has completed a study to determine whether replacement refrigerators and electric water heaters should be included as allowable measures in the Program. DOE reviewed the analysis of a pilot program conducted by the State of New York as well as analyses completed by Oak Ridge National Laboratory, and the Interlab Working Group on Energy Efficient and Low-Carbon Technologies. States have indicated a strong interest in these measures, particularly replacement refrigerators, to address electric base-load measures in addition to the traditional building envelope and heating and cooling needs in low-income homes. As the Program moves toward the whole-house approach embraced by the Weatherization Plus concept, it is important to address all of the energy efficiency needs of the home.

PROCEDURES:

Based on the recommendations above, DOE has approved the use of these two measures in the Program. The attachment lists the standards of conformance for each measure. States are reminded that these measures must be included as a part of their energy audit and that they must be cost-tested. DOE is currently amending the NEAT audit to include these new measures and will make the audit component change available to States as soon as possible. Those States not using the NEAT audit must make this change to their audit prior to incorporating these measures in the Weatherization Program. States experiencing any difficulty in making this audit change should contact the respective DOE Regional Office for assistance.

Minimum standards of energy efficiency for many major appliances were established by the U.S. Congress in the National Appliance Energy Conservation Act (NAECA) of 1987, and in the National Appliance Energy Conservation Amendments of 1988. Appliances covered by NAECA included refrigerators, refrigerator-freezers, freezers, room air conditioners, fluorescent lamp ballasts, incandescent reflector lamps, clothes dryers, clothes washers, dishwashers, kitchen

ranges and ovens, pool heaters, television sets (withdrawn in 1995), and water heaters. Standards for some fluorescent and incandescent reflector lamps, plumbing products, electric motors, and commercial water heaters, and heating, ventilation, and air conditioning (HVAC) systems were added in the Energy Policy Act of 1992 (EPACT). EPACT also allowed for the future development of standards for many other products.

Appliance manufacturers must produce products that either meet the minimum level of energy efficiency, or that consume no more than the amount of energy that the standard allows. These rules do not affect the marketing of products manufactured before the standards went into effect. Any products already made and in stock can be sold. The new standards will stimulate energy savings that benefit the consumer, and reduce fossil fuel consumption, thus reducing air pollution emissions.

The U.S. Department of Energy (DOE) is responsible for developing the test procedures for the Appliance Standards Program. These procedures are published in the Code of Federal Regulations (10 CFR Chapter 11, Part 430). The DOE periodically issues new standards or rulemakings for specific appliances. These are published in the Federal Register (FR). Information on the rulemaking process and FR notices are available at the DOE's Office of Codes and Standards' World Wide Web site at URL: http://www.eere.energy.gov/buildings/appliance_standards/

States which choose to include replacement refrigerators in their programs must also comply with the standards for addressing the environmental concerns with disposal of the existing refrigerator. The environmental standard is part of the attachment. The cost (if any) associated with the disposal requirement of refrigerators which contain CFC's are allowable program costs. States may amend their current 2000 State plans to incorporate this change.

REPLACEMENT REFRIGERATORS

(standards for conformance)

Refrigerators/Refrigerator-Freezers

[Final Rule: Energy Conservation Program for Consumer Products: Energy Conservation Standards for Refrigerators, Refrigerator-Freezers, Federal Register, 62FR23102, April 28, 1997]

Product Class	Maximum Annual Energy Consumption (kWh) 1/01/93	After 7/01/2001
Refrigerators and Refrigerator-Freezers-Manual Defrost	13.5 AV + 299	8.82 AV +248.42
Refrigerator-Freezers-Partial Automatic Defrost	10.4 AV + 398	8.82 AV + 248.4
Refrigerators-automatic defrost and refrigerator-freezers- automatic defrost with top freezer without ttd* ice service	16.0 AV + 355	9.80 AV + 276.0

Refrigerator-freezers-automatic defrost with side-mounted freezer without ttd* ice service	11.8 AV + 501	4.91 AV + 507.5
Refrigerator-freezers-automatic defrost with bottom-mounted freezer without ttd* ice service	16.5 AV + 367	4.60 AV + 459.0

* ttd = through-the-door

AV = total adjusted volume expressed in ft³

An adjustment factor accounts for the differing electricity requirements of refrigerators and refrigerator-freezers. The adjustment factors for these product classes are: all refrigerators-1.0; basic refrigerator-freezers-1.44; refrigerator-freezers-1.63. Other features of the refrigerator/freezer, such as whether the unit has automatic or manual defrost or through the door services, are also considered. Most refrigerator-freezers purchased in the United States are automatic defrost with a top-mounted freezer and without through-the-door ice service. Here is an example of how to determine the maximum annual energy consumption using this standard.

AV = fresh food volume in ft³ + (adjustment factor x freezer volume in ft³)

If the volume of the fresh food compartment is 14.5 ft³ and if the volume of the freezer compartment is 3.8 ft³ and the adjustment factor for a refrigerator-freezer is 1.63, then:

$$AV = 14.5 \text{ ft}^3 + (1.63 \times 3.8 \text{ ft}^3)$$

$$AV = 14.5 \text{ ft}^3 + 6.19 \text{ ft}^3$$

$$AV = 20.69 \text{ ft}^3$$

Now that the AV has been determined, plug it into the formula listed in the chart above. The formula for an automatic defrost with top-mounted freezer and without through-the-door ice service refrigerator-freezer is 16.0 AV + 355, therefore:

$$\text{kWh/yr} = 16.0 AV + 355$$

$$\text{kWh/yr} = 16.0 (20.69 \text{ ft}^3) + 355$$

$$\text{kWh/yr} = 331.04 \text{ ft}^3 + 355$$

$$\text{kWh/yr} = 686.04$$

Note: All replacement refrigerators must meet UL-250 (1993) standard.

Note: All refrigerator units replaced must be properly disposed according to the environmental standards in Clean Air Act (1990) section 608, as amended by Final Rule, 40CFR 82, May 14, 1993

REPLACEMENT ELECTRIC WATER HEATERS

(standards for conformance)

Electric Water Heaters

NEACA (1990), ASHRAE 90.1b (1992), and UL - 174 (1996) (electrical units)

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